

RESEARCH ARTICLE **OPEN ACCESS**

Treatment Gap in Mental Health Care for Victims of Road Traffic Accidents

Paul A. Boelen^{1,2}  | Maarten C. Eisma³  | Jos de Keijser³ | Lonneke I. M. Lenferink^{1,3,4}

¹Department of Clinical Psychology, Faculty of Social Sciences, Utrecht University, Utrecht, The Netherlands | ²ARQ National Psychotrauma Centre, Diemen, The Netherlands | ³Department of Clinical Psychology and Experimental Psychopathology, Faculty of Behavioral and Social Sciences, University of Groningen, Groningen, The Netherlands | ⁴Psychology, Health & Technology, Faculty of Behavioural, Management and Social Sciences, University of Twente, Enschede, The Netherlands

Correspondence: Paul A. Boelen (p.a.boelen@uu.nl)

Received: 21 December 2023 | **Revised:** 1 March 2024 | **Accepted:** 4 March 2024

Funding: This work was subsidized by Fund Victim Support (Fonds Slachtofferhulp).

Keywords: mental health services | posttraumatic stress | road traffic accident | treatment gap

ABSTRACT

Road traffic accidents (RTAs) are among the most frequent negative life-events. About one in five RTA survivors is susceptible to posttraumatic stress disorder (PTSD). Knowledge about needs for, and usage of, mental health services (MHSs) may improve options for care for RTA victims. The current study aimed to assess rates of victims using different MHSs, including psychotherapy, pharmacotherapy and support groups, and to explore correlates of needs for and use of these MHSs. Further, we aimed to estimate the treatment gap in post-RTA care, defined as including people with probable PTSD who did not use MHSs and people wanting but not getting help from MHSs. Dutch victims of nonlethal RTAs ($N = 259$) completed self-report measures on needs for and use of MHSs and PTSD. Results showed that 26% of participants had utilized care from psychotherapy, pharmacotherapy or support groups. Among people with probable PTSD, this was 56%. Increased posttraumatic stress was the strongest correlate of MHS use. Forty-eight participants (17.8%) had an unmet care need and represented the treatment gap. Commonly reported reasons and barriers preventing MHS use were perceptions that problems were limited or would disappear without care and financial worries. Regarding possible future care, participants reported a preference for face-to-face (over online) help from a psychologist (over other professionals). The treatment gap for Dutch RTA victims may be limited. However, a significant number of RTA victims need care but do not obtain this care. Care options may be improved by reducing practical barriers to MHSs and increasing mental health literacy and acceptability of different forms of care (besides face-to-face care).

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Summary

- This Dutch research enhanced knowledge about usage of, and needs for, mental health services (MHSs) among victims of road traffic accidents.
- Psychotherapy was the most frequently used MHS (24.5%), followed by pharmacotherapy (9.7%) and attending support groups (7.1%).
- Increased posttraumatic stress was associated with increased usage of, and/or need for, these MHSs.
- Almost eighteen percent of participants had not used MHSs, despite reporting significant posttraumatic stress and/or expressing a need for care.
- Not having problems, thinking these would disappear and financial worries were the most reported reasons and barriers preventing MHS use.

1 | Introduction

Road traffic injuries are a major and growing public health problem and a leading cause of death and disabilities among people aged 1–44 years around the world (World Health Organization 2023). Lifetime exposure to a road traffic accident (RTA) is 14% (Benjet et al. 2016), and about one in five RTA survivors is susceptible to develop posttraumatic stress disorder (PTSD; Lin et al. 2018). PTSD is a mental condition that can develop after experiencing or witnessing a traumatic event, characterized by distressing symptoms such as intrusive memories, flashbacks and heightened arousal. People with PTSD may also avoid reminders of the trauma and experience negative changes in mood and cognition (American Psychiatric Association 2022). PTSD is associated with serious physical and mental health consequences, including increased risk of arthritis and heart disease, poorer quality of life and increased use of health services (Atwoli et al. 2015; Scott et al. 2013). Without treatment, PTSD may become chronic and impair long-term functioning (Galatzer-Levy, Huang, and Bonanno 2018).

Despite the debilitating and often chronic nature of PTSD, about half of the people (i.e., 53.5%) in high-income countries who meet PTSD criteria do not seek mental health care (Koenen et al. 2017). This difference between the number of people needing or wanting care and those truly receiving care has been referred to as the treatment gap (Kohn et al. 2004). The magnitude of the PTSD treatment gap is comparable to those of other mental disorders, like depression and panic disorder (Kohn et al. 2004). It should be noted in this context that PTSD frequently remains undiagnosed, despite the availability of effective treatments for PTSD (Burback et al. 2023).

When people are diagnosed with PTSD, mental health care may be offered in different forms, including psychotherapy, pharmacotherapy and support groups. Research has shown that psychotherapy (e.g., trauma-focused cognitive behavioural therapy) is most often used, followed by pharmacotherapy (most often consisting of selective serotonin reuptake inhibitors [SSRIs]) (Nobles et al. 2017; Sripada et al. 2015) and more informal care, such as (peer) support groups (Possemato et al. 2018). Considering the high risk of significant posttraumatic stress (PTS) among RTA victims, it is important to understand how this population uses different mental health services (MHSs), what treatment needs

they have and what personal characteristics and characteristics of the RTA are related to needs for and use of MHSs. Moreover, if a treatment gap can be identified within this population, we need to better understand what factors may act as barriers to accessing such care so that this treatment gap can be addressed.

Various barriers for MHS utilization have been identified in trauma-exposed individuals, including concerns related to stigma, shame and rejection, low mental health literacy, lack of knowledge about access to treatment and treatment-related doubts, fear of negative social consequences, limited resources, time and expenses (for reviews: Kantor, Knefel, and Lueger-Schuster 2017; Smith, Workneh, and Yaya 2020). Additionally, trauma-related barriers have been identified for MHS use, such as the fears of re-experiencing traumatic events and avoidance tendencies (e.g., Jankovic et al. 2011; Stecker et al. 2013). Within the literature on barriers to treatments, there is an overrepresentation of military samples. For example, a systematic review by Smith, Workneh, and Yaya (2020) identified 21 relevant papers on barriers and facilitators to seeking mental health care, of which 17 were military samples and only four civilian samples. Moreover, to the best of our knowledge, no study to date has examined barriers for MHS use in an RTA victim sample.

Therefore, the overarching aim of the current study was to increase knowledge about the needs and usage of different MHSs of RTA victims. Specifically, Aim 1 was to assess the rates of people who (1) did not want to use a specific service (i.e., psychotherapy, pharmacotherapy or support groups), (2) wanted to use a specific service but did not do so, (3) have used a specific service but not anymore and (4) were using a service at the time of the study. Aim 2 was to explore correlates of needs and use of each of the three forms of care. Specifically, we examined whether people in the latter three groups (who wanted but did not get help, used to have a need for help and currently got help) differed from the people in the first group (who did not want and did not get help) in terms of sociodemographic variables (e.g., age), characteristics of the accident (e.g., experienced threat to life) and PTS severity. Aim 3 was to estimate the magnitude of a treatment gap in post-accident care. This gap was defined as including people who reported clinically relevant PTS while not using any MHS and people reporting that they wanted but did not get help. Aim 4 was to examine barriers and reasons for not getting care, among people who did not use any services and those who reported unmet care needs (i.e., those who represented the treatment gap). To obtain information that may help to reduce the treatment gap, Aim 5 was to explore what personal preferences and needs RTA survivors may have for future psychological care, in terms of delivery format, type of mental health professional and topics to address within care.

2 | Method

2.1 | Participants and Procedure

The current study was part of the Dutch TrafVic (Victims of Traffic accidents) project, which aimed to elucidate the consequences of (lethal and nonlethal) RTAs for (bereaved and nonbereaved) victims of such accidents (see, e.g., Boelen et al. 2022; Lenferink et al. 2021, 2023). The current study focused on MHS needs and usage of people confronted with nonlethal accidents. Participants were recruited via different sources, including

announcements on internet websites and social media channels, through invitation letters sent by the Dutch Victim Support organization, via peer support organizations and through university websites for students who could earn course credits for participation. Victims of nonlethal RTAs interested in participation could login to a secured online environment (designed in Qualtrics) where information about the project was provided and an informed consent form and questionnaires could be completed. To reduce response burden, questionnaires were divided in two parts, and participants were given the opportunity to discontinue completion of the questionnaires after the first part.

Four hundred and eight people started filling in the questionnaires. We excluded data from 80 people who stopped the survey after completing only a few questionnaires, whose loved one had died in an RTA or who completed the questionnaire twice. We also excluded data from 48 participants involved in an accident <1 months or >10 years ago and 11 participants who had 100% missing data on the MHS questionnaire. In total, data from $N=269$ participants were used in the present study. All participants completed Part 1 of the questionnaires (including sociodemographic and accident-related variables and measures of PTS); 249 also completed Part 2 that included items about needs and possible usage of future care. Consequently, analyses regarding this latter issue were based only on data provided by these 249 participants. The Ethical Committee Psychology of the University of Groningen approved the study (reference number: PSY-1819-S-0113). All participants provided written informed consent.

2.2 | Measures

The current study included questions on sociodemographic characteristics, accident characteristics, post-accident MHS needs and use, reasons and barriers for not receiving care, needs and wishes regarding future care and PTS symptoms.

2.2.1 | Sociodemographic Characteristics

Participants were asked about their sex (dichotomized as 0= male, 1= female), age (in years) and education (multiple categories, collapsed into 0= lower than college/university, 1= college/university).

2.2.2 | Characteristics of the Accident

Participants reported the date of the accident and were asked what transportation type they used during the accident (categorized as car/motorcycle vs. other type) and whether they were the driver of the transportation vehicle (0= no, 1= yes). Perceived threat to life was measured with a single item ("To what extent did you fear for your own life during the traffic accident?") rated on a scale ranging from 1= *not at all* to 7= *a lot* (cf. Delahanty et al. 2003). To assess injury severity, we used the item "Were you physically injured in the accident?" with seven response options (1= no, 2= yes, but no medical attention was required, 3= yes, I obtained treatment from my family doctor, 4= yes, I obtained treatment at a hospital polyclinic, 5= yes, I was hospitalized for 1 night through 2 weeks, 6= yes, I was hospitalized longer than

2 week, and 7= yes, I was admitted to the intensive care unit). We collapsed scores into two categories, with scores 1–3 considered as indicating no injury and scores 4–7 indicating physical injury (cf. Mayou and Bryant 2002).

2.2.3 | Post-Accident MHS Needs and Use

Following prior research (Lichtenthal et al. 2015) and similar to our parallel study among people bereaved due to RTAs (Lenferink et al. 2021), needs and usage of MHSs were assessed by asking 'Have you used any of these services?' This question was followed by three services: (1) talking with a psychologist, therapist or psychiatrist, (2) using pharmacotherapy (e.g., antidepressant, mood stabilizer, tranquilizer or sleep medication) and (3) participation in support groups or peer support meetings. Participants chose one of four answers for each service type: 1= No, and I don't want to, 2= No, but I would like to, 3= Yes, but currently I don't, and 4= Yes, I still use this service.

2.2.4 | Reasons and Barriers for Not Receiving Care

People who answered with 1, 2 or 3 to each of the three post-accident care needs and use items (i.e., those currently not receiving any care) were asked to report to what extent 13 possible reasons and barriers for not getting care applied to them on 4-point scales (ranging from 1= *does not apply to me at all* to 4= *strongly applies to me*; cf. Lichtenthal et al. 2015). A sample item is 'I currently do not receive help from a psychologist, psychiatrist, or support group, because it is difficult to find the right help'. We considered items rated 1 or 2 as 'Reason/barrier absent' and 3 or 4 as 'Reason/barrier present'.

2.2.5 | Needs and Wishes Regarding Future Care

In Part 2 of the questionnaires (completed by 249 out of 269 participants), three items were included about (i) the preferred form of possible future psychological care (with six response options, e.g., 'by telephone'), (ii) which professional should preferably provide this care (with seven response options, e.g., 'social worker') and (iii) topics that should preferably be addressed during this care (with seven response options, e.g., 'My emotions related to the accident').

2.2.6 | Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5)

The PCL-5 is a 20-item measure of PTS symptoms as defined in DSM-5 (APA 2013) developed by Blevins et al. (2015, Dutch version) and Boeschoten et al. (2014). People rated how often they experienced each symptom in the past month on 5-point scales ranging from 0= *not at all* to 4= *extremely*. The instruction and items referred to 'the accident' as index event. A provisional DSM-5-based PTSD diagnosis can be made by treating each item rated as ≥ 2 (moderately) as a symptom endorsed, then following the DSM-5 diagnostic rule that requires at least one B item (Questions 1–5), one C item (Questions 6–7), two D items (Questions 8–14) and two E items (Questions 15–20). Cronbach's alpha of all PCL-5 items was 0.94 in the current sample.

2.3 | Statistical Analyses

For Aim 1, descriptive statistics were used to map rates of people needing and using the three forms of MHSs (psychotherapy, pharmacotherapy and support groups). For Aim 2, three logistic regression analyses were performed to examine correlates of needs and use (vs. no needs or use) for these three services. People reporting the need to obtain psychotherapy or reported prior or current use of psychotherapy were categorized as *people needing or using psychotherapy*. People reporting that they did not use psychotherapy and were not interested in obtaining it were categorized as *people not needing or using psychotherapy*. Next, this dichotomized dependent variable (needing/using vs. not needing/using psychotherapy) was regressed on sociodemographic and accident-related variables (see Table 1) plus PTS levels, by including these independent variables simultaneously into the model. Two similar logistic regression models were built with needing/using versus not needing/using pharmacotherapy and needing/using versus not needing/using support groups as dependent variables, respectively.

For Aim 3, we counted the number of people who met DSM-5-based criteria for probable PTSD (based on the PCL-5) and who did not use any of the three MHSs, as well as the number of participants reporting that they wanted to get help from one or more of these services but did not get it (irrespective of PTS levels); these participants represented the group with unmet post-accident care needs. For Aim 4, we used descriptive statistics to explore reasons why people who did not use any of the three

MHSs were in this category. Within in this group, we also examined differences in reasons between people with unmet post-accident care needs and those who did not obtain help and had no such unmet needs, using Fisher's exact tests. To address Aim 5, we counted the different response options for the three questions on the form of possibly preferred future care, the preferred professional providing that care and issues one would wish to address in that care.

3 | Results

3.1 | Descriptive Statistics

Participant and accident characteristics are summarized in Table 1. Most participants were women (71%). The mean age was 30.3 (SD = 45.9) years. One in three had a college/university level education. An average of 4 years had passed since the accident. The accident involved a car/motorcycle in 45% of participants, and 69.1% participants were driving the vehicle in the accident. The mean perceived threat to life was 3.30 (on a 1–7 scale), and the majority (83.6%) was not physically injured. In total, $n = 32$ (11.9%) met criteria for probable PTSD, based on PCL-5 scores.

3.2 | Aim 1: MHS Needs and Use

Table 2 shows MHS needs and usage for the total sample and for people with probable PTSD. In total, 70 people (26.0%) had used (one or more) services (i.e., psychotherapy, pharmacotherapy and/or support group) related to the accident, and 28 (10.4%) were still receiving this care. More specifically, 66 people (24.5%) received psychotherapy, 26 (9.7%) got pharmacotherapy and 19 (7.1%) participated in support group meetings. Among people with probable PTSD ($n = 32$), 18 people (56.3%) used (one or more) services, and 12 people (37.5%) still used it; 15 (46.9%) received psychotherapy, 12 (37.5%) got pharmacotherapy and 6 (18.8%) participated in support groups.

3.3 | Aim 2: Correlates of MHSs' Needs and Use

People who expressed the need to use one of the three MHSs or reported prior or current use of a service were categorized as *people needing or using this service*. People who reported that they did not use an MHS and were also not interested in using it were categorized as *people not needing or using this service*. Three logistic regression analyses were performed to examine the association of sociodemographic and accident-related variables (see Table 1) plus PTS severity with self-reported need for or use of psychotherapy, pharmacotherapy and support groups, respectively. The category of people not needing or using this service was used as reference category.

Table 3 shows the results. Increased age, experienced threat to life and PTS severity significantly increased the likelihood of needs for, or use of, psychotherapy. Increased age and PTS severity were associated with needs for/use of pharmacotherapy. Increased age, time since the accident and PTS severity were associated with needs for/use of support groups.

TABLE 1 | Characteristics of participants ($N = 269$).

Sociodemographic background variables	
Gender, N (%)	
Male	78 (29.0)
Female	191 (71.0)
Age, M (SD), range	30.3 (15.9), 18–87
Education, N (%)	
Lower than college/university	175 (65.1)
College/university	94 (34.9)
Characteristics of the traffic accident	
Number of months passed since accident, M (SD)	47.4 (33.9)
Type of transportation during the accident, N (%)	
Car/motorcycle	121 (45.0)
Other	148 (55.0)
Were you the driver of the transportation vehicle?, N (%) ^a	
No	77 (28.6)
Yes	186 (69.1)
Perceived threat to life (range 1–7), M (SD)	3.30 (2.08)
Were you physically injured in the accident?	
No injury	225 (83.6)
Physical injury	44 (16.4)

^aThere were missing values for this variable.

3.4 | Aim 3: Magnitude of Gap in Mental Health Care

The total number of participants with probable PTSD who did not use any of the three MHSs was 14 (Gap 1). The total number of participants who reported the need for using one of these MHSs (but had not yet obtained that service) was 41 (Gap 2). Combined, a total number of 48 participants (17.8%) was in one or both of these categories. They were labelled as having *unmet care needs*, representing the treatment gap in mental health care following RTAs.

3.5 | Aim 4: Reasons and Barriers Preventing MHSs' Use

Reasons and barriers preventing participants from using MHSs were only assessed for 199 participants who reported no current use of MHSs. Results are summarized in Table 4. The most commonly reported reasons were 'I have no emotional problems I need help for' (Item 1; 70.4%), 'I think the problem will naturally disappear' (Item 2; 38.2%) and 'I worry about financial costs for help' (Item 5; 10.1%).

Of all 48 people who had an unmet treatment care need, there were 29 who had had no treatment whatsoever.¹ With this subgroup, the three most commonly reported reasons and barriers for not using MHSs (Table 4) were also 'I have no emotional problems I need help for' (Item 1; 44.8%), 'I think the problem will naturally disappear' (Item 2; 37.9%) and 'I worry about financial costs for help' (Item 5; 34.5%).

Among the 199 participants who reported no current use of MHSs, we examined differences in reasons and barriers between the 29 participants who were part of the treatment gap (having an unmet need for one of the forms of care with/without probable PTSD) and the rest of the group ($n = 170$) who had not received any help. We found that 'I have no emotional problems I need help for' (Item 1) was a stronger reasons/barrier among the $n = 170$ (Fisher's exact test = 0.002). Reasons and barriers more often endorsed by the 29 participants with a treatment gap were the following: 'It is difficult to find the right help' (Item 3); 'I worry about financial costs for help' (Item 5); 'I am worried what others might think if they knew I receive help' (Item 6); 'I find it painful to talk about what happened' (Item 7); 'I have no transportation' (Item 8); 'I don't believe that other people can help me' (Item 11); 'I am ashamed to ask for help' (Item 12) and 'My responsibilities to care for my partner/family members makes it difficult to seek help responsibilities to care' (Item 13; all Fisher's exact tests < 0.02).

3.6 | Aim 5: Needs Regarding Possible Use of Future Care

Of 269 people included in the study, 249 provided data about needs for and possible usage of future help. In response to the question 'In what form would you prefer to receive psychological help?', 191 (76.7%) replied 'in person', 8 (3.2%) 'by telephone', 21 (8.4%) 'online, via the internet', 13 (5.2%) 'via videoconferencing services' and 32 (12.9%) 'I don't know'. When asked 'From which type of professional would you like to receive your psychological help?', 14 (5.6%) replied 'social

worker', 178 (71.5%) 'psychologist', 23 (9.2%) 'psychiatrist', 56 (22.5%) 'experience experts/peers', 7 (2.8%) 'spiritual caregiver/someone from church' and 37 (14.9%) 'I don't know'. In response to the question 'What topics would you like to discuss with this psychological help?', 37 (14.9%) answered 'My experiences at the time of the accident', 68 (27.3%) 'My emotions related to the accident', 48 (19.3%) 'The ways I am coping with this accident', 104 (41.8%) 'Dealing with stress', 83 (33.3%) 'My identity (who I am) and purpose', 30 (12.0%) 'Relationship problems' and 35 (14.1%) 'I do not know'.

4 | Discussion

RTAs are associated with substantial mental health problems, including PTSD. While, undoubtedly, some RTA victims manage to find their way to MHSs, there are reasons to believe that not everyone who could benefit from these services find their way to them. The present study aimed to gain more insight into the needs for and use of MHSs of this group and the magnitude of a possible gap between the number of people needing or wanting care and those truly receiving care. Our first aim was to examine how many people used different MHSs. Approximately one in four (26%) participants had, at some time or currently, utilized psychotherapy, pharmacotherapy or support from support groups. Among people with probable PTSD, this was one in two (56%). Among RTA victims who used care, psychotherapy was most common (25%) and utilization of pharmacotherapy (10%) and support groups (7%) less so. Among people with clinically relevant levels of PTS symptoms who used care, psychotherapy (47%) and pharmacotherapy (38%) were used about twice as often as support groups (19%). These findings mirror prior research in other countries demonstrating that people with PTSD most often receive psychotherapies, followed by medication, for example, SSRIs, and informal care, for example, support groups (Nobles et al. 2017; Possemato et al. 2018; Sripada et al. 2015).

Our second aim was to assess the associations of sociodemographic and accident-related variables and PTS with self-reported needs for or use of psychotherapy, pharmacotherapy and support groups. A consistent predictor of care needs and use was PTS; people with higher levels of PTS were significantly more likely to make use of all three different forms of care. It stands to reason that more severe PTS would elicit stronger tendencies to use MHSs. These results align with most studies previously conducted in this area, identifying PTS symptom severity as a strong predictor of MHSs use in military personnel (e.g., DeViva et al. 2016; Harpaz-Rotem et al. 2016; for a review: Johnson and Possemato 2019). Perceived threat to life was the strongest predictor of the use of psychotherapy, but not other MHSs. We are not aware of prior research studying this association, but multiple explanations for this finding are possible. For example, RTAs that constitute a threat to one's life may be more difficult to cope with thereby eliciting a stronger need for psychotherapy. Alternatively, GPs and hospitals may find it more appropriate to refer people exposed to a life-threatening event to a psychotherapist. Another notable finding was that older people were somewhat more likely to use all three different forms of care. This is a puzzling finding, as most prior research suggests that older people were less likely to receive psychotherapy (e.g., Spont et al. 2014; Johnson and Possemato 2019) although other studies yield null findings (e.g., Harpaz-Rotem et al. 2016).

TABLE 2 | Needs and use of mental health care services.

Category of care	No, and I don't want to	No, but I would like to	Yes, but currently I don't	Yes, I still use this service
Complete sample ($N = 269$)				
Sessions with a psychologist, therapist or psychiatrist	180 (66.9%)	23 (8.6%)	51 (19.0%)	15 (5.6%)
Pharmacotherapy	237 (88.1%)	6 (2.2%)	14 (5.2%)	12 (4.5%)
Support group meetings	223 (82.9%)	29 (10.0%)	8 (3.0%)	11 (4.1%)
Subsample with clinically relevant levels of posttraumatic stress based on PCL-5 ($n = 32$)				
Sessions with a psychologist, therapist or psychiatrist	8 (25.0%)	9 (28.1%)	6 (18.8%)	9 (28.1%)
Pharmacotherapy	17 (53.1%)	3 (9.4%)	7 (21.9%)	5 (15.6%)
Support group meetings	15 (46.9%)	11 (34.4%)	4 (12.5%)	2 (6.3%)

Abbreviation: PCL-5 = Posttraumatic Stress Disorder Checklist for DSM-5.

TABLE 3 | Correlates of needs for, or use of, mental health care services ($N = 269$).

	Psychotherapy			Pharmacotherapy			Support group		
	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>B</i>	<i>SE</i>	<i>OR</i>	<i>B</i>	<i>SE</i>	<i>OR</i>
Socio-demographic variables									
Gender (0 = male, 1 = female)	0.423	0.386	1.526	-0.653	0.542	0.521	0.631	0.521	1.880
Age in years	0.029	0.012	1.030**	0.040	0.018	1.040*	0.037	0.015	1.037*
Educational level (0 = lower than university, 1 = university)	-0.026	0.375	0.974	-0.502	0.564	0.605	-0.424	0.508	0.654
Accident-related variables									
Number of months passed since accident	0.003	0.005	1.003	0.010	0.007	1.011	0.018	0.007	1.018***
Type of transportation during the accident (0 = car/motorcycle; 1 = other)	-0.216	0.390	0.806	0.600	0.577	1.822	-0.579	0.505	0.560
Were you the driver of the transportation vehicle? (0 = no, 1 = yes)	0.126	0.437	1.135	0.978	0.693	2.660	-1.243	0.670	0.288
Perceived threat to life	0.196	0.083	1.216**	-0.134	0.110	0.874	0.011	0.098	1.011
Were you physically injured in the accident? (0 = no, 1 = yes)	0.904	0.490	2.470	0.151	0.607	1.163	0.986	0.535	2.680
Mental health									
Symptom levels of posttraumatic stress (PCL-5)	0.079	0.014	1.082***	0.106	0.018	1.111***	0.086	0.015	1.090***

Abbreviations: OR = odds ratio; PCL-5 = Posttraumatic Stress Disorder Checklist for DSM-5.

* $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$.

It could be that older Dutch adults may be better able to access and use MHSs than younger Dutch adults, for example, because they have more experience in using care and more financial

resources. That said, conclusions must be drawn with caution given that associations between independent and dependent variables in the regression analyses were generally small.

TABLE 4 | Percentages of barriers for mental health service usage among people who had not received any care at time of study completion ($N = 199$) and people within treatment gap ($n = 29$).

<i>I currently receive no psychosocial care because</i>		$n = 199$	$n = 29$
1	I have no emotional problems I need help for.	140 (70.4%)	13 (44.8%)
2	I think the problem will naturally disappear.	76 (38.2%)	11 (37.9%)
3	It is difficult to find the right help.	13 (6.5%)	8 (27.6%)
4	Other people who sought help had bad experiences.	8 (4%)	3 (10.3%)
5	I worry about financial costs for help.	20 (10.1%)	10 (34.5%)
6	I am worried what others might think if they knew I receive help.	8 (4%)	4 (13.8%)
7	I find it painful to talk about what happened.	9 (4.5%)	6 (20.7%)
8	I have no transportation.	6 (3%)	5 (17.2%)
9	I don't feel comfortable talking about my feelings with other people.	18 (9%)	5 (17.2%)
10	I don't have time for help.	12 (6%)	4 (13.8%)
11	I don't believe that other people can help me.	14 (7%)	7 (24.1%)
12	I am ashamed to ask for help.	6 (3%)	3 (10.3%)
13	My responsibilities to care for my partner/family members makes it difficult to seek help.	8 (4%)	5 (17.2%)

The third aim was to explore the number of people who had either clinically relevant PTS severity but did not receive mental health care and/or who indicated a need for care in the form of psychotherapy, pharmacotherapy and/or a support group but had not managed to obtain such care. In total, 48 participants (17.8%) were categorized as having an *unmet care needs* and represented the treatment gap in mental health care following RTAs. This treatment gap is much smaller than the treatment gap identified for PTSD in the World Mental Health Surveys, which showed that about half of people with PTSD do not receive mental health care (Koenen et al. 2017). Similarly, this percentage was well below the estimates for other common disorders, such as depression (56.3%), panic disorder (55.9%) and generalized anxiety disorder (57.5%) derived from a review of epidemiological studies (Kohn et al. 2004). It should be noted, though, that there is substantial variability in the treatment gap for psychiatric disorders between countries (Kohn et al. 2004). The Netherlands has an advanced mental healthcare system in which all inhabitants are insured for mental healthcare and use of MHSs is fully or partially reimbursed. The treatment gap in the current sample was similar to the gap emerging in a sample of Dutch people bereaved due to RTAs. In a sample of the latter population, 20% showed clinically relevant prolonged grief severity but did not receive care and/or indicated a need for care in the form of psychotherapy, pharmacotherapy and/or a support group but had not managed to receive such care (Lenferink et al. 2021). Although the treatment gap may be more limited in Dutch RTA victims than in people with PTSD globally, our results also suggest that a substantive minority does not receive care while they do need it.

Therefore, the fourth aim of our study was to identify reasons and barriers preventing RTA victims from receiving mental health care. In the group not currently receiving care, and within the group with unmet care needs, reporting that one does not have a problem, that one believes that problems will disappear over time, and financial worries were the most commonly

reported reasons for not accessing MHSs. For the group with unmet care needs, the belief that one does not have a problem or that problems will solve themselves over time may be an indication of low mental health literacy. Financial worries, on the other hand, reflect limited resources that stand in the way of receiving appropriate care. Specifically, among the people with unmet care needs, some barriers were more prevalent than for those without unmet care needs. These barriers primarily encompassed practical problems (i.e., financial worries, transportation issues, care responsibilities), lack of knowledge about access to treatment and treatment-related doubts (i.e., finding it difficult to find help, not believing that others can help), issues relating to stigma, shame and rejection (i.e., being worried about what others think, being embarrassed about seeking help) and being afraid of the emotional consequences of receiving mental health care (i.e., finding it painful to talk about problems). These themes mirror those identified in prior systematic reviews of research on barriers to mental health care in people exposed to traumatic events conducted in other countries, primarily among military samples (Kantor, Knepfel, and Lueger-Schuster 2017; see also Smith et al. 2020).

These findings suggest that improving mental health literacy, including increasing knowledge about access and effects of mental health care and reducing mental health stigma, are key goals to help close the treatment gap for RTA victims. Notably, mental health literacy about the treatment of PTSD is negatively related to aspects of mental health stigma, such as negative beliefs about mental health problems and treatment (Williston and Vogt 2022). Providing accurate information about PTSD and its treatment may therefore be helpful to reduce key barriers to receiving mental health care. Testing interventions such as Mental Health First Aid (Morgan, Ross, and Reavley 2018) and other public health interventions specifically aimed at increasing knowledge and reducing stigma for PTSD may be helpful to determine their effect on mental health literacy, mental health stigma and MHS use in trauma-exposed populations, such as RTA victims.

Our fifth and last aim was to explore needs and preferences regarding potential use of future psychological care. Regarding the form of care, three in four preferred personal (face-to-face) care—and less than one in 10 preferred some other form (e.g., via the internet). These findings are reminiscent of previous research suggesting that people with mental health problems have limited openness to online interventions. In our parallel study among people who had lost loved ones in an RTA, one in three participants reported being positive about online help (Lenferink et al. 2021). A study in Germany indicated that internet interventions were only marginally acceptable to people with depression (Ebert et al. 2015). The modest popularity of online therapy in the current and these earlier studies contrasts with the fact that online help can effectively mitigate PTS (Sijbrandij, Kunovski, and Cuijpers 2016). One possible way to reduce the identified gap in treatment for PTS associated with RTAs may be to increase the acceptability of online treatments, for instance, by providing more information about the nature and potential power of such interventions (cf. Ebert et al. 2015). It is noteworthy that part of the data for this study was collected during the COVID-19 pandemic and that the acceptability of online interventions has increased since the pandemic (Baudier et al. 2023).

Regarding the type of professional caregiver people would turn to, about three in four participants would want to receive help from a psychologist rather than another healthcare provider (e.g., social worker, psychotherapist). Approximately one in five reported interest in help from expert by experience or peers. It is difficult to interpret these findings; they could reflect that people have quite a clear preference to obtain care from a psychologist but may also indicate that the nature and usefulness of care by other professionals is less well known. One implication could be that more awareness about options for effective help from social workers and other health care professionals could possibly help reduce the treatment gap we detected in this study. Considering issues people wanted to address in future care, ‘Dealing with stress’ was reported most often (by 41.8%), followed by different issues related to the accident and its aftermath. Notably, the conclusions regarding this fifth aim should be considered with caution. For example, the answers are strongly determined by the formulation of the items that we used and the limited response options. A more rigorous evaluation of needs and preferences for different types of care following RTAs, including those related to pharmacological care and support groups, would require more research, with more open-ended questions.

The study has several other limitations that should be considered. First, this sample is a voluntary response sample, and people who were younger, woman and those who had higher education were overrepresented in the study. Thus, more research in a representative sample of RTA victims is needed to establish whether current results generalize to older, lower educated samples with more men. Second, the study was conducted in the Netherlands, a high-income Western country with an advanced mental health care system. Results would likely be different in other countries, specifically in those with less availability of reimbursed MHSs. Replication of this study in multiple countries would be helpful to help contextualize the current findings. Third, we used a self-report scale to identify people with clinical levels of PTSD. It is likely that some of the people with probable PTSD identified in our study would not be diagnosed with this condition following a formal clinical interview (Kramer et al. 2023). This adds

a degree of uncertainty to the size of the treatment gap that we identified. Had we have applied clinical interviews for PTSD, our study may have yielded slightly different findings. Fourth, some of the people participated in this study at the time of the COVID-19 pandemic. The supply of mental health care in the Netherlands was not necessarily reduced during that time, but remote care was used much more. Although we do not know to what extent COVID-19 influenced the results, this reinforces the importance of replicating the current study.

4.1 | Conclusion

Despite these limitations, the present study is, to the best of our knowledge, the first comprehensive evaluation of mental health care use, needs and barriers to using MHSs in RTA survivors. Thereby, it has added valuable knowledge on these themes in a population at risk of experiencing PTSD. We have demonstrated that Dutch RTA victims frequently receive psychotherapy and pharmacotherapy and participate in peer support groups. PTS severity, age and perceived threat to one's life during the RTA emerged as predictors of MHS use. Nevertheless, a substantial minority of RTA victims, with probable PTSD and/or indicating a need for care, does not receive appropriate care. This treatment gap can potentially be overcome by addressing practical barriers to MHS use as well as by increasing PTSD mental health literacy and reducing PTSD mental health stigma. In addition, increasing awareness and acceptability of different forms of care (e.g., internet-based treatment), provided by different sorts of caregivers (e.g., social workers, experience experts), could potentially contribute to improving care for victims of RTAs.

Acknowledgements

We thank Victim Support the Netherlands for their help with the recruitment of participants. Fund Victim Support (Fonds Slachtofferhulp) subsidized this work.

Endnotes

¹The rest of this subgroup ($n=19$) reported an unmet need for at least one of the three categories of care but still had obtained care in another of these categories. They were, therefore, not asked to score the items referring to barriers for MHS usage.

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